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ATTACHMENTS

ASTM C 67 Immersion Testing

Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated

Material Safety Data Sheets for all products evaluated

FOR: Steve Young
Boral Brick
5611 Kelley Street
Houston, TX 77026

cc: Paul Tessier

SUBJECT: Boral Brick - Henderson Plant
Henderson, TX

DATE: May 31, 2000

PROJECT: 0002-01 PC

SAMPLES SUBMITTED: 8 styles of new red clay brick:

6 Sleeves of "Brandywine", fine white sand finish
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Oxford Red", dark sand finish
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Wellsley", "dust" finish
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Ross Blend"
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Belmont", dark decorative finish with fine sand
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Hudson Bay", white powdery decorative finish
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Westport", white sand finish
Size: 9 3/4" X 2 3/4" X 2 3/4"

6 sleeves of "Old Boston", dark, fine sand decorative finish
Size: 9 3/4" X 2 3/4" X 2 3/4"

Submitted by: Steve Young
Boral Brick Company
5611 Kelley Street
Houston, TX 77026

PURPOSE OF TESTING:

Samples of red clay brick units were submitted to PROSOCO, Inc.'s Testing Laboratory with a request to determine if application of the products evaluated will produce any adverse effects during new construction cleaning operations. Additionally, the effectiveness of water repellents, suitable for clay brick masonry, will be evaluated.

A. New Construction Cleaning – Sure Klean® New Construction Cleaners were evaluated for removal of laboratory applied mortar.

To simulate new construction soiling, the ability of each cleaner to remove hardened deposits of type N cementitious mortar was evaluated and is reported below. Mortar was applied by placing the fired clay units face down in a smooth-finished tray of prepared mortar for 10 minutes. The mortar-stained brick were cured at 75% ± 5% RH and 70°F ± 5°F before any cleaning tests were attempted.

Sure Klean® 600 Detergent, Sure Klean® 101 Lime Solvent and Sure Klean® Vana Trol® were tested for removal of gray N masonry cement mortar after 7, 14 and 21 days of curing.

B. Adverse Effects - Sure Klean® 600 Detergent, Sure Klean® 101 Lime Solvent and Sure Klean® Vana Trol® were tested at various dilutions to determine if they would produce any adverse effects during the cleaning process. Adverse effects were evaluated visually and were based upon damage to the decorative brick surface coating, discoloration or erosion/etching of the masonry unit.

C. Protective Water Repellents - Sure Klean® Weather Seal Siloxane PD and Sure Klean® Weather Seal Siloxane WB Concentrate (1:9 and 1:14) were evaluated for their ability to provide water repellency to the submitted samples.

CLEANING PRODUCTS

BRICK TYPE	101 Lime Solvent	600 Detergent	Vana Trol®
All submitted brick samples	1:6	1:6	1:6
All submitted brick samples	1:8	1:8	

ADVERSE EFFECTS PRODUCTS EVALUATED

Sample	Sure Klean® 600 Detergent	Sure Klean® 101 Lime Solvent	Sure Klean® Vana Trol®
All submitted brick samples	1:6	1:6	1:6
All submitted brick samples	1:8	1:8	

WATER REPELLENT PRODUCTS EVALUATED

Sample	Siloxane PD	Siloxane WB
All submitted brick samples	Concentrate	1:9
All submitted brick samples		1:14

SECTION A – NEW CONSTRUCTION CLEANING

DESCRIPTION OF PRODUCTS EVALUATED – New Construction Cleaning

These cleaning trials were conducted to determine the optimal cleaning/cure time combination to most efficiently remove type N mortar from the submitted fired clay units.

The removal of gray Type N cementitious masonry cement mortar was evaluated on treated and untreated units after 7, 14 and 21-day cure.

Type N cementitious mortar was prepared in compliance with the manufacturers instructions, applied to the brick surface and allowed to cure for 7, 14 and 21 days prior to removal with high pressure water rinse using pressure rinsing equipment and chemical assist.

Sure Klean® 101 Lime Solvent – A general purpose, concentrated acidic cleaner for dark colored brick, tile and concrete surfaces. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-10 parts water. Apply by brush or low-pressure spray.

Sure Klean® 600 Detergent – A general purpose, concentrated acidic cleaner for brick, tile and concrete surfaces. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-25 parts water. Apply by brush or low-pressure spray.

Sure Klean® Vana Trol® - A concentrated acidic cleaner for new masonry surfaces that are subject to vanadium, manganese and other metallic stains. Use on: gray, brown, white and most light-colored brick; natural stone; cast stone. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-25 parts water. Apply by brush or low-pressure spray.

TEST METHOD – New Construction Cleaning

Dilution ratios refer to mixtures of concentrated cleaner : fresh water. Chemical cleaners were evaluated using the following procedure:

1. Prewet the surface with water.
2. Apply the cleaner.
3. Allow the appropriate dwell time, as specified.
   - 101 Lime Solvent ..... 1-3 minutes
   - 600 Detergent ..... 3-5 minutes
   - Vana Trol® .....5 minutes
4. Pressure rinse thoroughly.

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Test Results - New Construction Cleaning

Brandywine

% removal

	7 day	14 day	21 day
101 Lime Solvent (1:6)	100%	100%	100%
101 Lime Solvent (1:8)	100%	100%	100%
SK 600 Detergent (1:6)	100%	100%	100%
SK 600 Detergent (1:8)	100%	100%	100%
SK Vana Trol® (1:6)	95%	95%	95%

Oxford Red

	7 day	14 day	21 day
101 Lime Solvent (1:6)	100%	100%	100%
101 Lime Solvent (1:8)	100%	100%	100%
SK 600 Detergent (1:6)	95%	95%	95%
SK 600 Detergent (1:8)	95%	95%	95%
SK Vana Trol® (1:6)	95%	95%	95%

Wellsley

	7 day	14 day	21 day
101 Lime Solvent (1:6)	90%	95%	95%
101 Lime Solvent (1:8)	90%	95%	95%
SK 600 Detergent (1:6)	85%	95%	95%
SK 600 Detergent (1:8)	90%	95%	95%
SK Vana Trol® (1:6)	80%	85%	85%

Ross Blend

	7 day	14 day	21 day
101 Lime Solvent (1:6)	95%	95%	95%
101 Lime Solvent (1:8)	95%	95%	95%
SK 600 Detergent (1:6)	95%	95%	95%
SK 600 Detergent (1:8)	95%	95%	95%
SK Vana Trol® (1:6)	80%	80%	85%

Cleaning Test Results (cont.)

Belmont

	7 day	14 day	21 day
101 Lime Solvent (1:6)	95%	95%	95%
101 Lime Solvent (1:8)	95%	95%	95%
SK 600 Detergent (1:6)	95%	100%	95%
SK 600 Detergent (1:8)	95%	95%	95%
SK Vana Trol® (1:6)	95%	90%	95%

Hudson Bay

	7 day	14 day	21 day
101 Lime Solvent (1:6)	95%	95%	95%
101 Lime Solvent (1:8)	95%	95%	95%
SK 600 Detergent (1:6)	95%	95%	95%
SK 600 Detergent (1:8)	95%	95%	95%
SK Vana Trol® (1:6)	92%	95%	95%

Westport

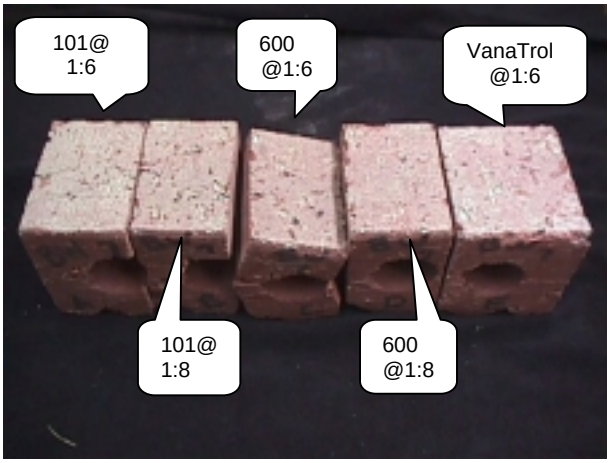
	7 day	14 day	21 day
101 Lime Solvent (1:6)	95%	95%	95%
101 Lime Solvent (1:8)	95%	95%	95%
SK 600 Detergent (1:6)	100%	95%	95%
SK 600 Detergent (1:8)	100%	95%	95%
SK Vana Trol® (1:6)	85%	90%	90%

Old Boston

	7 day	14 day	21 day
101 Lime Solvent (1:6)	100%	100%	100%
101 Lime Solvent (1:8)	100%	100%	100%
SK 600 Detergent (1:6)	100%	100%	100%
SK 600 Detergent (1:8)	100%	100%	100%
SK Vana Trol® (1:6)	95%	100%	100%

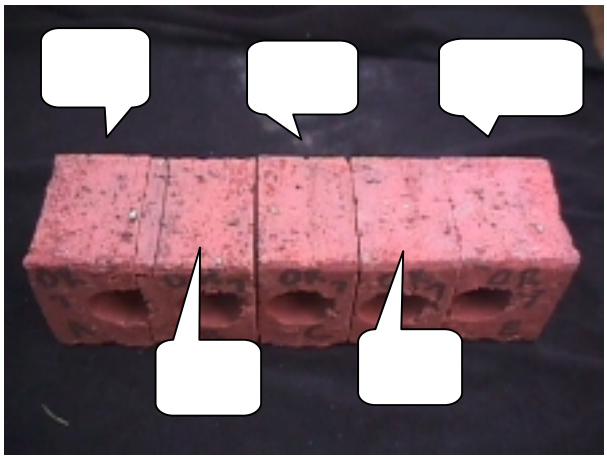
The following photos show the sampled brick before and after 7-day mortar removal.

Brandywine before cleaning



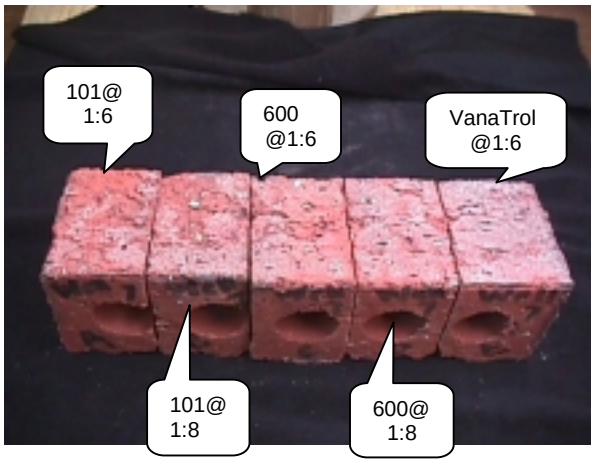
Brandywine After 7 Days (cleaned)

Oxford Red before cleaning



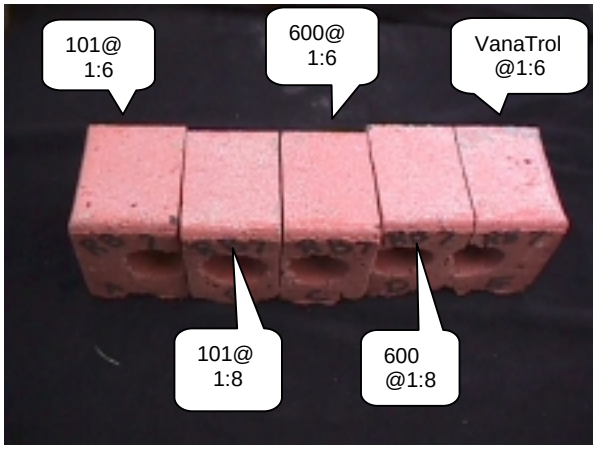
Oxford Red after 7 days (cleaned)

Wellsley before cleaning



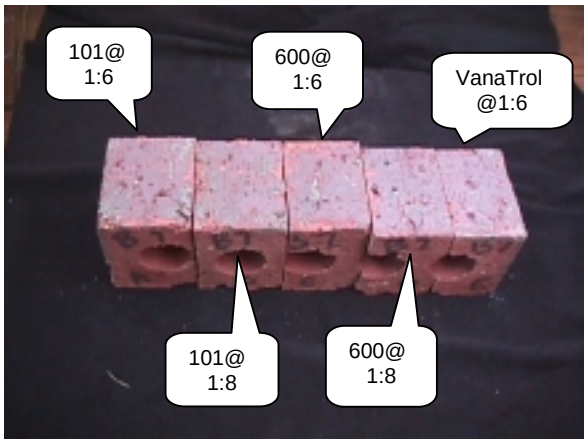
Wellsley After 7 days (cleaned)

Ross Blend before cleaning



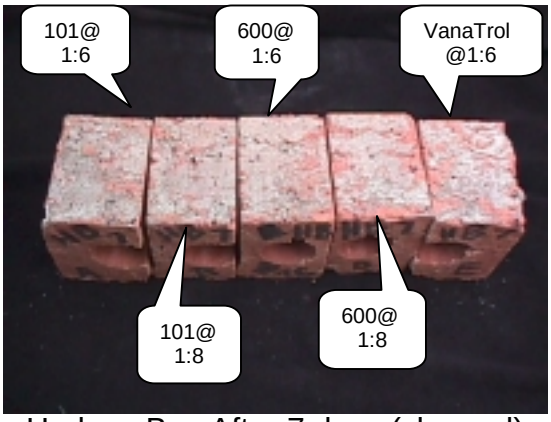
Ross Blend After 7 days (cleaned)

Belmont before cleaning

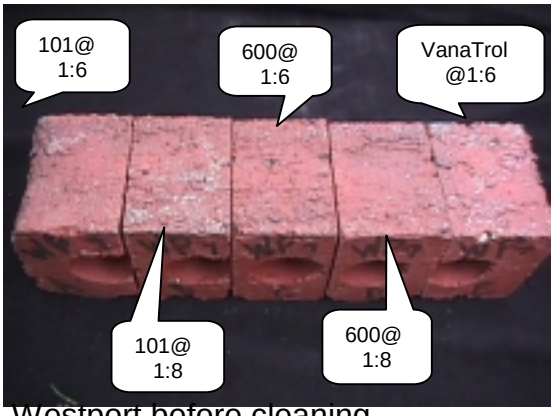


Belmont After 7 days (cleaned)

Hudson Bay before cleaning



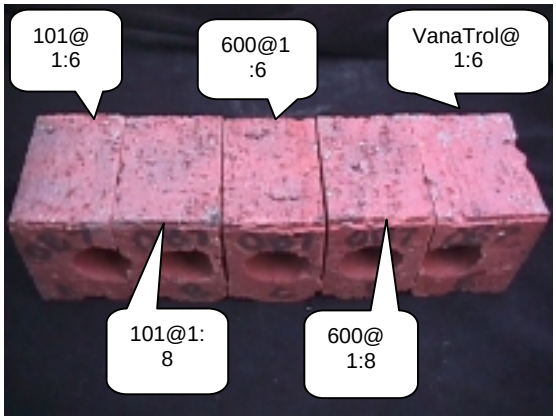
Hudson Bay After 7 days (cleaned)



Westport before cleaning

Westport A

Old Boston before cleaning



Old Boston After 7 days (cleaned)

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CONCLUSIONS - Cleaning:

Based on the test results, all of the selected cleaners performed extremely well in removing excess mortar smears on the submitted brick samples. The cleaners performed well in removing the mortar soils even after allowing the mortar to remain on the surface of the brick for 21 days under ideal curing conditions. 600 Detergent and 101 Lime Solvent performed slightly better than Vana-Trol in terms of total mortar removal off of the submitted Boral Brick samples.

It is also recommended that the selected cleaners always be used in the lowest possible concentration, typically a 1:8 dilution. They should be rinsed with the lowest pressure of water as practical, garden hose strength preferred, to minimize removal of the decorative sand finish. It is recommended that all cleaning be done within 7 days of soiling to facilitate easier removal of excess mortar and construction dirt.

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RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

Sample	Sure Klean® 600 Detergent	Sure Klean® Vana Trol®	Sure Klean ® 101 Lime Solvent
Brandywine	1:8	1:6	1:8
Oxford Red	1:8	1:6	1:8
Wellsley	1:8	1:6	1:8
Ross Blend	1:8	1:6	1:8
Belmont	1:8	1:6	1:8
Hudson Bay	1:8	1:6	1:8
Westport	1:8	1:6	1:8
Old Boston	1:8	1:6	1:8

SECTION B - ADVERSE EFFECTS:

DESCRIPTION OF PRODUCTS EVALUATED - Adverse Effects:

Sure Klean® 600 Detergent - A general purpose, concentrated acidic cleaner for brick, tile and concrete surfaces. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-12 parts water. Apply by brush or low-pressure spray.

Sure Klean® 101 Lime Solvent – A general purpose, concentrated acidic cleaner for dark colored brick, tile and concrete surfaces. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-10 parts water. Apply by brush or low-pressure spray.

Sure Klean® Vana Trol® - A concentrated acidic cleaner for new masonry surfaces that are subject to vanadium, manganese and other metallic stains. Designed for use on gray, brown, white and most light-colored brick, natural stone and cast stone. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-10 parts water. Apply by brush or low-pressure spray.

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TEST METHOD - Adverse Effects:

Dilution ratios refer to mixtures of concentrated cleaner : fresh water.

Sure Klean® 600 Detergent and Sure Klean® 101 Lime Solvent were both evaluated at dilutions of 1:6 and 1:8. Sure Klean® Vana Trol® was evaluated at a dilution of 1:6. The following procedure was used:

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.
3. Allow a 5-minute exposure time.
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.*****
6. Allow the surface to dry for at least 18 hours and visually examine.

***** Pressure rinsing was conducted at approximately 800 psi with a warm water flow rate of 2.1 gallons per minute.

TEST RESULTS - Adverse Effects Evaluation:

Brandywine

101 Lime Solvent	Effects
1:6 dilution	Partial removal of fine, white sand finish
1:8 dilution	Partial removal of fine, white sand finish

600 Detergent	Effects
1:6 dilution	Partial removal of fine, white sand finish
1:8 dilution	Partial removal of fine, white sand finish

Vana Trol®	Effects
1:6	Partial removal of fine, white sand finish

Oxford Red

101 Lime Solvent	Effects
1:6 dilution	Severe removal of darkened sand finish (>75%)
1:8 dilution	Severe removal of darkened sand finish (>75%)

600 Detergent	Effects
1:6 dilution	Severe removal of darkened sand finish (>75%)
1:8 dilution	Severe removal of darkened sand finish (>75%)

Vana Trol®	Effects
1:6	Severe removal of darkened sand finish (>75%)

Wellsley

101 Lime Solvent	Effects
1:6 dilution	Slight removal of "dust" finish
1:8 dilution	Slight removal of "dust" finish

600 Detergent	Effects
1:6 dilution	Slight removal of "dust" finish
1:8 dilution	Slight removal of "dust" finish

Vana Trol®	Effects
1:6	Slight removal of "dust" finish

TEST RESULTS - Adverse Effects Evaluation (cont'd):

Ross Blend

101 Lime Solvent	**Effects**
1:6 dilution	No apparent adverse effects
1:8 dilution	No apparent adverse effects

600 Detergent	**Effects**
1:6 dilution	No apparent adverse effects
1:8 dilution	No apparent adverse effects

Vana Trol®	**Effects**
1:6	No apparent adverse effects

Belmont

101 Lime Solvent	**Effects**
1:6 dilution	Partial removal of dark decorative finish and fine sand (25-35%)
1:8 dilution	Partial removal of dark decorative finish and fine sand (25-35%)

600 Detergent	**Effects**
1:6 dilution	Partial removal of dark decorative finish and fine sand (25-35%)
1:8 dilution	Partial removal of dark decorative finish and fine sand (25-35%)

Vana Trol®	**Effects**
1:6	Partial removal of dark decorative finish and fine sand (25-35%)

Hudson Bay

101 Lime Solvent	**Effects**
1:6 dilution	SEVERE removal of white powdery decorative finish (>75%)
1:8 dilution	SEVERE removal of white powdery decorative finish (>75%)

600 Detergent	**Effects**
1:6 dilution	SEVERE removal of white powdery decorative finish (>75%)
1:8 dilution	SEVERE removal of white powdery decorative finish (>75%)

Vana Trol®	**Effects**
1:6	SEVERE removal of white powdery decorative finish (>75%)

TEST RESULTS - Adverse Effects Evaluation (cont'd):

Westport

101 Lime Solvent	**Effects**
1:6 dilution	COMPLETE REMOVAL of white sand finish (severe alteration of look)
1:8 dilution	COMPLETE REMOVAL of white sand finish (severe alteration of look)

600 Detergent	**Effects**
1:6 dilution	COMPLETE REMOVAL of white sand finish (severe alteration of look)
1:8 dilution	COMPLETE REMOVAL of white sand finish (severe alteration of look)

Vana Trol®	**Effects**
1:6	COMPLETE REMOVAL of white sand finish (severe alteration of look)

Old Boston

101 Lime Solvent	**Effects**
1:6 dilution	Severe removal of dark, fine sand decorative finish (>95%)
1:8 dilution	Severe removal of dark, fine sand decorative finish (>95%)

600 Detergent	**Effects**
1:6 dilution	Severe removal of dark, fine sand decorative finish (>95%)
1:8 dilution	Severe removal of dark, fine sand decorative finish (>95%)

Vana Trol®	**Effects**
1:6	Severe removal of dark, fine sand decorative finish (>95%)

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CONCLUSIONS - Adverse Effects:

With the exception of the Ross Blend brick, all bricks suffered an alteration of appearance due to the use of these selected cleaners. It should be noted however, that it is the cleaning process, particularly the use of pressure rinsing, that causes the majority of surface alterations. The bricks that suffered adverse effects all had a loosely bound sand finish surface coating that is easily removed by the slightest application of force.

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RECOMMENDATIONS - Adverse Effects:

Due to the fragile nature of the surface coating on these bricks, it is recommended that the selected cleaners always be used in the lowest possible concentration, typically a 1:8 dilution. They should be rinsed with the lowest water pressure practical, garden hose strength preferred, to minimize removal of the decorative sand finish. It is recommended that all cleaning be done within 7 days of soiling to facilitate easier removal of excess mortar and construction dirt.

To minimize potential for surface erosion, remove excess mortar, grout or similar cementitious soiling as soon as practical. Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should always be conducted to determine the most appropriate cleaning product and procedures for a particular project. See product literature for additional application and product information.

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SECTION C - PROTECTIVE WATER REPELLENTS:

The testing described below evaluates the suitability of water repellent treatments.

The surface treatments evaluated were selected for their suitability for application based on the following selection criteria:

1. Weatherproofing properties
2. Color change
3. Ease of application

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DESCRIPTIONS OF PRODUCTS EVALUATED - Protective Water Repellents:

Sure Klean® Weather Seal Siloxane PD - A low odor, alkaline stable, water-based blend of silanes and oligomeric alkoxysiloxanes. Weather Seal Siloxane PD is supplied pre-diluted and is designed for use on concrete and clay masonry surfaces. Weather Seal Siloxane PD penetrates more deeply than conventional water or solvent-based water repellents.

Sure Klean® Weather Seal Siloxane WB Concentrate - A self-emulsifying water repellent concentrate designed for dilution with fresh water at the job site. This solvent-free blend of silanes and oligomeric alkoxysiloxanes mixes easily with water to produce a penetrating water repellent which is ideal for application to either dense or porous masonry surfaces.

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SAMPLE PREPARATION - Protective Water Repellents:

The submitted brick were cut, oven dried and allowed to reabsorb atmospheric humidity for 24 hours prior to treatment. The treatment method consisted of two 10-second immersions with a 20-second absorption period between immersions to simulate a wet-on-wet application. All treatments were allowed to cure for 14 days prior to testing.

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TEST METHODS - Protective Water Repellents:

Water Absorption: ASTM C 67, Immersion

Water absorption was determined by comparing the dry weight of the sample with its weight after immersion in water at 10-minute, 30-minute, 60-minute and 24-hour intervals. See ASTM C 67 for additional information.

Reduced water absorption values – reported as effectiveness – measure the effectiveness of selected treatments in protecting samples from water penetration and water related decay mechanisms. Generally a reduction of approximately 80% is required to provide resistance to water intrusion under normal exposure conditions.

Water Absorption Tube Test: RILEM II.4, 5.0 milliliters, 20 minutes

The water absorption tube test simulating wind driven and wind blown rain conditions was also performed. Tests were run with 5.0 milliliter head pressures. Filled to 5 milliliters, a water absorption tube produces a 77 mph dynamic wind pressure. See RILEM II.4 Tech Note for additional information. See ASTM C 67 and Rilem II.4 Tech Note for additional information.

The ranking system used to evaluate the effectiveness of the products applied to each submitted sample is as follows:

AA = “Above Average” correlates to less than or equal to 20% of the maximum untreated absorption.

A = “Average” correlates to less than or equal to 50% of the maximum untreated absorption

BA = “Below Average” correlates to greater than 50% of the maximum untreated absorption.

EXAMPLE: If RILEM tubes applied to an untreated sample result in loss of 5 ml of water or more, then :

A rating of **AA** *Above Average* water repellent performance would require loss of no more than 5 ml X 20% = 1 ml.

A rating of **A** *Average* water repellent performance would require loss of no more than 5 ml X 50% = 2.5ml.

A rating of BA *Below Average* water repellent performance would be reported for treatments which result in a loss of more than 50% X 5ml = 2.5ml+

TEST RESULTS - Protective Water Repellents:

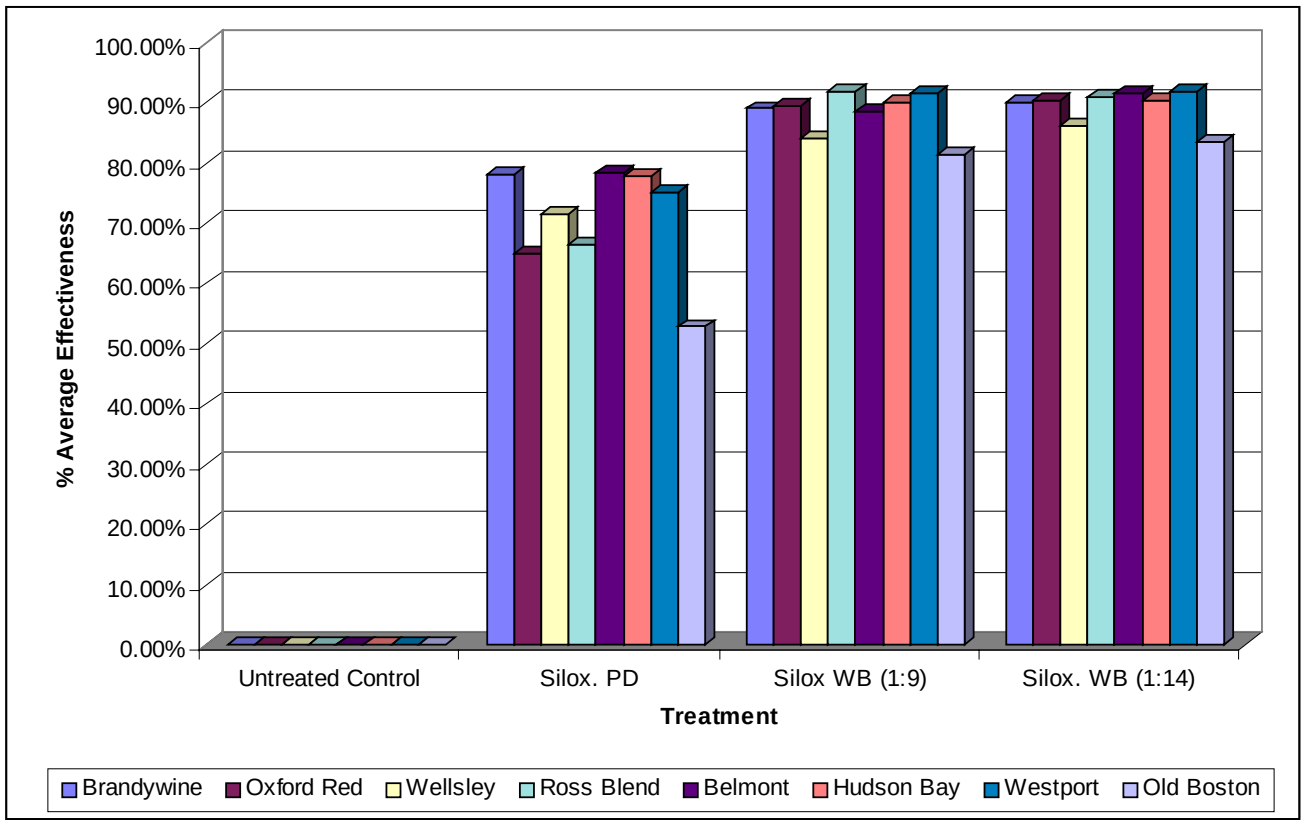
Water Absorption: ASTM C 67, Immersion

Brandywine	% Weight Increase	% Reduced Water Absorption
Untreated Control	6.68	--
Siloxane PD	1.47	78.0
Siloxane WB Concentrate (1:9)	0.73	89.1
Siloxane WB Concentrate (1:14)	0.67	90.0
Oxford Red	**% Weight Increase**	**% Reduced Water Absorption**
Untreated Control	8.19	--
Siloxane PD	2.88	64.9
Siloxane WB Concentrate (1:9)	0.87	89.4
Siloxane WB Concentrate (1:14)	0.79	90.4
Wellsley	**% Weight Increase**	**% Reduced Water Absorption**
Untreated Control	7.21	--
Siloxane PD	2.06	71.4
Siloxane WB Concentrate (1:9)	1.15	84.0
Siloxane WB Concentrate (1:14)	1.00	86.2
Ross Blend	**% Weight Increase**	**% Reduced Water Absorption**
Untreated Control	8.39	--
Siloxane PD	2.82	66.4
Siloxane WB Concentrate (1:9)	0.68	91.9
Siloxane WB Concentrate (1:14)	0.76	90.9
Belmont	**% Weight Increase**	**% Reduced Water Absorption**
Untreated Control	7.19	--
Siloxane PD	1.56	78.3
Siloxane WB Concentrate (1:9)	0.82	88.5
Siloxane WB Concentrate (1:14)	0.60	91.7

TEST RESULTS - Protective Water Repellents: (cont.)

Hudson Bay	% Weight Increase	% Reduced Water Absorption
Untreated Control	7.46	--
Siloxane PD	1.66	77.8
Siloxane WB Concentrate (1:9)	0.74	90.1
Siloxane WB Concentrate (1:14)	0.72	90.3
Westport	**% Weight Increase**	**% Reduced Water Absorption**
Untreated Control	6.73	--
Siloxane PD	1.68	75.1
Siloxane WB Concentrate (1:9)	0.56	91.6
Siloxane WB Concentrate (1:14)	0.55	91.8
Old Boston	**% Weight Increase**	**% Reduced Water Absorption**
Untreated Control	3.85	--
Siloxane PD	1.82	52.8
Siloxane WB Concentrate (1:9)	0.72	81.4
Siloxane WB Concentrate (1:14)	0.64	83.5

WATER ABSORPTION: ASTM C 67, Immersion



Graph 1

TEST RESULTS - Protective Water Repellents:

Water Absorption Tube Test: RILEM II.4, 5.0 milliliters, 20 Minutes

AA = Above Average **A = Average** BA = Below Average

Brandywine	Results (in mph)*	Results	Ranking
Untreated Control	<40	1.8 mL	---
Siloxane PD	53	0.0 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**
Oxford Red	**Results (in mph)***	**Results**	**Ranking**
Untreated Control	>40	>5.0	---
Siloxane PD	<40	0.3 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.3 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.5 mL	**AA**
Wellsley	**Results (in mph)***	**Results**	**Ranking**
Untreated Control	>40	4.0 mL	---
Siloxane PD	53	0.4 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**
Ross Blend	**Results (in mph)***	**Results**	**Ranking**
Untreated Control	<40	4.0 mL	---
Siloxane PD	60	0.0 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**
Belmont	**Results (in mph)***	**Results**	**Ranking**
Untreated Control	<40	1.5 mL	---
Siloxane PD	53	0.3 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**

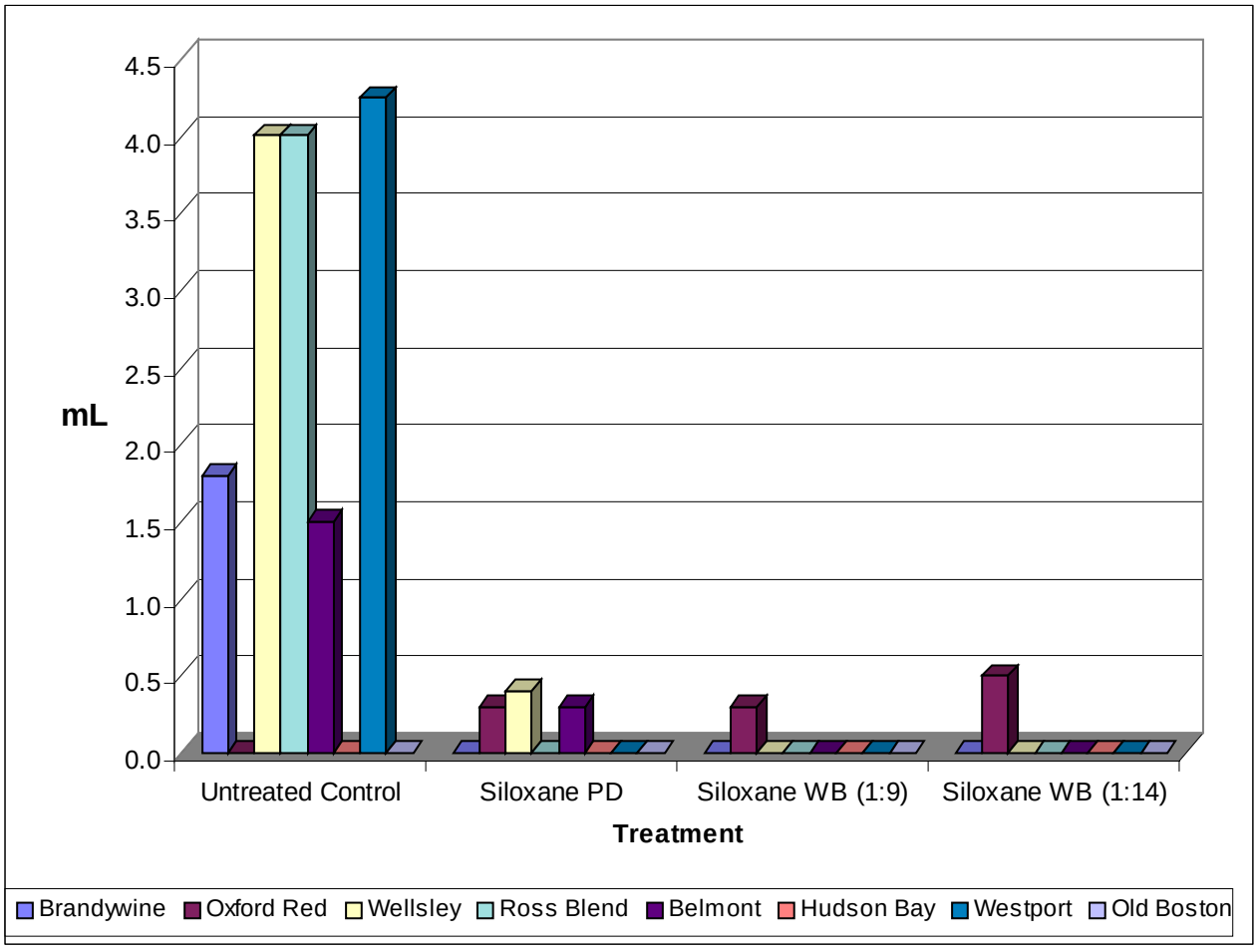
TEST RESULTS - Protective Water Repellents (Rilem) : (cont.)

Hudson Bay	Results (in mph)*	Results	Ranking
Untreated Control	<40	>5.0 mL	---
Siloxane PD	55	0.0 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**
Westport	**Results (in mph)***	**Results**	**Ranking**
Untreated Control	47	4.3 mL	---
Siloxane PD	47	0.0 mL	
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**
Old Boston	**Results (in mph)***	**Results**	**Ranking**
Untreated Control	<40	>5.0 mL	---
Siloxane PD	53	0.0 mL	**AA**
Siloxane WB Concentrate (1:9)	*	0.0 mL	**AA**
Siloxane WB Concentrate (1:14)	*	0.0 mL	**AA**

*The short RILEM was run on the Siloxane PD only as a confirmation test to verify results. It was not run on the Siloxane WB treatments.

WATER ABSORPTION TUBE TEST:

RILEM II.4, 5.0 Milliliter, 20 Minutes



Graph 2

CONCLUSIONS - Protective Water Repellents:

Based upon laboratory evaluations, all of the submitted brick exhibited above average water repellency when treated with Weather Seal Siloxane PD or Weather Seal Siloxane WB, diluted 1:9 or 1:14 with fresh water. However, generally a reduction of approximately 80% is required to provide resistance to water intrusion under normal exposure conditions. Siloxane PD consistently provided less than 80% effectiveness on these submitted brick samples, while Siloxane WB provided greater than 80% effectiveness when used in both 1:9 and 1:14 dilutions.

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RECOMMENDATIONS - Protective Water Repellents:

Since Weather Seal Siloxane WB, diluted 1:14 with fresh water both provided excellent water repellent protection on all of the submitted brick type, this products is recommended for job site evaluations where these brick types are incorporated into the building's façade. It must be pointed out that in any installation, the brick are a single component of the masonry facade. The ability of a water repellent treatment to prevent the ingress of water is affected by a variety of other factors, therefore on-site testing should be carried out for all installations with the recommended systems to ensure job site workmanship yields equivalent results.

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate water repellent product and procedures for a particular project. See product literature for additional application and product information.

Jason J. Netherton
Research and Development Chemist

JJN/csm

Laboratory Report

Pallet Card Evaluation

Boral Brick
Henderson, TX

Project No. **0002-01 PC**

Prepared For:

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PROSOCO, Inc.
May 2000